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Unraveling the Determinants of Microcredit Interest Rate

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Abstract: The introduction of microcredit has drawn significant attention to the interest rates charged by microfinance institutions, capturing the interest of policymakers worldwide. Despite the competitive nature of the microfinance market, borrowers still bear the burden of relatively high interest rates. Similar to other loans, microcredit requires repayment, and the interest rate is determined by various factors. Nevertheless, acknowledging that the interest rate is intrinsically linked to the risk associated with microcredit is essential. Microfinance institutions often deal with borrowers from low-income backgrounds, making the repayment process inherently riskier. This study aimed to address the crucial question concerning the factors influencing microcredit loan rates, an area that has not been extensively studied. Since the respondents are SMEs, they have been questioned about the interest rates charged to them. If the enterprises have a well-established track record, opt for short-term loans with smaller amounts, and maintain accurate accounting records, the lender may consider offering a lower interest rate. Understanding the determinants of interest rates helps in segmenting borrowers based on their risk profiles. Policymakers and regulators can use the insights from the study to develop appropriate regulations that balance the need for financial inclusion with consumer protection. Additionally, educating borrowers about the determinants of interest rates, how they are calculated, and ways to improve their creditworthiness can empower them to make informed financial decisions and negotiate better terms.

Keywords: *Microcredit, microfinance institutions, interest rate, loan, characteristics.*

1. Introduction and Background

The Grameen Bank was established in Bangladesh in the 1980s to pave the beginning of the microcredit system, serving as a catalyst for the global development of microcredit programs. According to Aghion and Morduch (2004), microcredit is a component of microfinance targeting individuals excluded from conventional banking, particularly low-income individuals, by providing them with small loans at a subsidized interest rate. The fundamental concept enables impoverished individuals to participate in the economic market by establishing small businesses through microfinance services provided to them (Al-Shami et al., 2013). Nevertheless, microcredit organizations have been strongly criticized for charging high-interest rates since the introduction of microcredit in the late 1970s. The issue has gained the attention of policymakers globally.

The primary purpose of establishing microfinance institutions was to offer credit access to individuals with low incomes, aiding them in their financial needs. Nevertheless, microfinance institutions have implemented higher interest rates in the process of extending credit to these low-income earners. Wondirad (2022) asserted that microfinance institutions are charging a high interest rate not primarily for profit but to cover operational costs. The study of interest rates in microfinance remains relatively limited (Dorfleitner et al., 2013), although previous studies have extensively examined the factors influencing interest rates in the traditional and standard banking literature (Fernando, 2006; Rosenberg et al., 2009, 2013). The interest rate determinants from the perspective of micro-lenders have been assessed in prior studies. Two primary common arguments observed in the existing literature are operational costs and microfinance institutions' sustainability, which contributes to high interest rates (Fernando, 2006; Rosenberg et al., 2009, 2013).

Despite the high level of competition in the microfinance market, microfinance institutions continue to charge considerably high interest rates. This study seeks to enhance understanding regarding the interest rates applied by microcredit institutions. Numerous studies have extensively examined the standard banking literature on the factors influencing interest rates. Nevertheless, empirical investigations in the realm of

microfinance are scarce. Specifically, the microcredit interest rate determinants from the borrower's perspective remain largely unexplored. For instance, Dorfleitner et al. (2013) attempted to address the influence of borrower-related factors on microcredit interest rates. Thus, this study bridges the literature gap by exploring the determinants of interest rates charged to borrowers.

2. Literature Review

Ever since the inception of microcredit in the late 1970s, the interest rate imposed on microcredit has garnered the interest of policymakers globally. Kapkiyai and Kimitei (2015) asserted that the interest rate applied is contingent upon the borrower's risk profile, serving to mitigate adverse selection issues that arise when distinguishing between non-risky and risky borrowers. According to standard economic theory, the reduced interest rates are the result of cost reductions brought on by experience, learning through experience, and economies of scale Nwachukwu et al. (2018). Additionally, interest rates may exhibit discrimination between female and male borrowers. Factors such as gender, lending methodology, regulation, organizational type, and cost factors influencing microcredit interest rates were investigated by Dorfleitner et al. (2013). The study revealed that high microcredit interest rates were paid by women. Alesina et al. (2008) undertook an empirical study in Italy, which revealed that although women are less risky borrowers than men, relatively higher interest rates are paid by women than men. Hermes et al. (2011) noted that microcredit providers are inclined to impose higher interest rates on women borrowers due to the lower efficiency of women compared to men. Furthermore, the borrower's age determines the loan rate. Lenders charge a higher interest rate on younger borrowers as they are perceived to be riskier (Alesina et al., 2008).

The bank-borrower relationship, which plays a crucial role in determining the interest rate on loans, has been explored in prior research (Titman & Wessels, 1988; Rand, 2007). Rand (2007) stated that if firms have an established borrowing history with a bank, they can secure loans at lower interest rates. Titman and Wessels (1988) contended that smaller firms, which have limited relationships with financial institutions, are considered less favored clients, leading to higher interest rates charged by banks. This proposition is corroborated by Thakor (1996), indicating that transaction costs and interest charges decline when there is a closer relationship between banks and small firms. The interest rate is determined by the return and risk profile, and a closer relationship between banks and borrowers allows banks to gather more information, thereby reducing the non-payment risk and resulting in a decline in transaction costs.

Tuyon et al. (2011) stated that each microcredit provider possesses distinct features and employs diverse business models. Dorfleitner et al. (2013) proposed the hypothesis that the interest rate charged varies based on the type of microcredit provider. Credit unions, rural banks, banks, and non-bank financial institutions were the types of microcredit providers used as dummy variables by the authors. According to the authors, compared to other institutions, higher interest rates were charged by non-bank financial institutions. The findings align with Cuéllar-Fernández et al. (2016), who identified that credit unions charged the lowest interest rate while non-bank financial institutions charged the highest. The clients' democratic ownership of credit unions could be one plausible explanation for this phenomenon.

In terms of enterprise characteristics, older firms could obtain debt at lower interest rates as they might be perceived as less risky and less susceptible to financial distress, as suggested by Titman and Wessels (1988). Nevertheless, the impact of the sector variable on interest rates remains understudied. The exposure to natural hazards such as storms, floods and drought contributes to the reason why the agricultural sector is perceived as high risk. Consequently, lenders charge a higher interest rate in line with the concept of higher risk leading to higher interest rates.

3. Research Methodology

In this investigation, the models known as ordinary least squares (OLS) were utilized to determine the elements that affect the interest rate on loans. The respondents were surveyed regarding the interest rates they were charged for loans. The methodologies used by Rand (2007) were the basis for the OLS models shown below:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 \ldots\ldots\ldots \beta_{15} X_{15} + \varepsilon$$

The interest rate microcredit providers charge the enterprises is the dependent variable in the equation. Networking, microcredit providers' selection, creditworthiness measured by the enterprises' accounts books, enterprise characteristics, borrower characteristics, and loan characteristics are the independent variables.

The study hypothesizes an inverse relationship between interest rate and gender. According to Dorfleitner et al. (2013), based on global data, microfinance institutions (MFIs) charge higher interest rates to women borrowers. Additionally, Hermes et al. (2011) stated that microcredit providers are inclined to charge women higher interest rates since they are less efficient than men. The study hypothesizes a positive relationship between interest rate and educational level. Education can serve as a financial literacy proxy, which encompasses the attitudes, knowledge, and abilities necessary for adopting appropriate money management practices related to income, savings, borrowing, and investment decisions. For instance, the interest rate charged to borrowers declines as a better-educated client can help reduce MFIs' operating costs.

In terms of enterprises' characteristics, the interest rate is negatively associated with the age of the enterprise. Older firms could obtain debt at lower interest rates and be less susceptible to financial distress as they may be perceived as less risky, as per the argument of Titman and Wessels (1988). Bigger enterprises have better opportunities to acquire trade credits from suppliers, bank loans, and liabilities from other sources, as these enterprises possess higher bargaining power when negotiating with financial providers compared to small enterprises. In terms of the sector variable, a notable disparity exists between the interest rates and economic sectors.

Small and medium-sized enterprises (SMEs) involved in the service and manufacturing sectors are anticipated to experience lower interest rates compared to the agricultural sector. Droughts, storms, and floods are among the risks that natural hazards the agricultural sector faces, which contribute to higher interest rates. The loan rate the lender charges increases with the risks. The price of microcredit is impacted by the risk related to lending effects. Similar to other loans, microcredit requires repayment. Thus, the risks SMEs face must be examined by microcredit providers (Serrano-Cinca et al., 2016).

The literature reports a positive correlation between the interest rates and the duration of short-term loans. Increased servicing and monitoring requirements over time contribute to the high administration costs in short-term loans. Consequently, higher interest rates are charged for short-term loans by lenders. Conversely, Rose and Hudgins (2005) discovered that there are greater possibilities of losses over time as long-term loans typically entail higher interest rates due to the maturity risk. Due to potential job or income interruptions, the longer maturity period increases the borrower's likelihood of defaulting (Ramos-Garay, 2006). For example, the borrower is exposed to increased risk if the borrowing period is prolonged due to disruptions in cash inflow caused by a decline in sales, which can adversely impact loan repayment. Moreover, the study hypothesizes a positive association between the interest rate charged and the loan amount. Similarly, the interest rate charged is hypothesized to exhibit a negative relationship with the mode of interest payment.

In this study, it is hypothesized that a significant difference exists in the interest rates charged among MFIs, commercial banks, and DFIs. In other words, the interest rate charged is contingent upon the type of microcredit provider. The study hypothesized that compared to commercial banks and DFIs, MFIs are more likely to charge higher loan rates. For example, compared to MFIs, significantly lower interest rates are imposed by development financial institutions that receive substantial government subsidies (Fernando, 2006). Besides, as MFIs strive to provide better services, they often charge higher loan rates which, in turn, can restrict the capacity for development due to the relatively lower loan rates available.

The study hypothesizes a positive correlation between the interest rate and networking variable. Firms with a prior borrowing relationship with a bank have an increased likelihood of obtaining a loan and can secure loans at lower interest rates (Rand, 2007). As per the observation of Titman and Wessels (1988), higher interest rates are charged on smaller firms with limited relationships with financial institutions as they are regarded as less preferred clients. In examining the factors affecting interest rates charged on bank loans, prior studies incorporated creditworthiness as measured by collateral (Rand, 2007). Contrarily, according to

Serrano-Cinca et al. (2016), the collateral variable to measure creditworthiness was not incorporated in the present study as microcredit does not necessitate collateral. Therefore, the model includes the presence of accounts books to explore whether creditworthiness remains significant in determining the interest rate.

4. Results

The findings of OLS estimates for the factors affecting the interest rate charged on microcredit are displayed in Table 2. As shown in Table 1, heteroscedasticity exists, although the model is free from multicollinearity. Hence, to address this concern, the standard error is reported using robust standard error.

Table 1: Tests for Multicollinearity and Heteroscedasticity

Mean VIF of Multicollinearity	**1.85 (<10)**
Breusch Pagan/Cook-Weisberg (BP/CW)	73.86 (0.000)

Note: 1) The presence of multicollinearity is indicated by a variance inflation factor (VIF) of 10 or greater
2) The probability > chi2 for the BP/CW test is presented in parentheses.

Choice of microcredit institution, networking, creditworthiness, enterprise characteristics, borrower characteristics, and loan characteristics are the six sets of variables that are hypothesized to influence the dependent variable, the interest rate charged on microloans. Nevertheless, loan characteristics, enterprise characteristics, creditworthiness, and networking explain the interest rate charged on microcredit loans (Refer to Table 2). The evidence regarding the impact of borrower characteristics on the interest rate charged remains inconclusive.

The negative coefficient for the age of the enterprise suggests an inverse relationship between the interest rate charged and the enterprise's age. The interest rate decreases as the age of the enterprise increases since lenders perceive mature enterprises as more established and stable. Moreover, if the lender can later compensate for the higher default rate by charging young enterprises higher interest rates, they might be willing to finance riskier borrowers.

A higher interest rate exhibits a negative correlation with a shorter loan duration. This negative relationship indicates that medium-term loans typically have higher interest rates compared to short-term ones. Relative to a medium-term loan, the estimated coefficient indicates that the interest rate charged by a lender for a short-term loan is 0.42% less. As a result of income interruptions, longer loan durations are associated with higher interest rates due to the lender's heightened risk of the borrower defaulting on the loan, aligning with the findings of Diabate (2000) and Rose and Hudgins (2005). Enterprises opting for shorter loan durations are perceived as less risky by lenders as they exhibit confidence and commitment to loan repayment. *Ceteris paribus*, as the loan duration shortens, the risk decreases, leading lenders to offer a lower interest rate.

The loan amount exhibits a positive correlation with the interest rate charged on a microloan, and this relationship is statistically significant at the 10% level. Moreover, the lender is inclined to impose a higher interest rate for a loan amount exceeding RM25,000. Since a larger loan entails higher risk for the lender, as borrowers have a higher probability of default, the lender applies a higher interest rate for a bigger loan. Low-income individuals are often offered a low microcredit amount. Thus, individuals who seek to borrow exceeding RM25,000 face higher interest rates.'

According to Aghion & Morduch (2004), since the lender has inadequate information about a borrower's risk profile, higher average interest rates are charged to all borrowers regardless of their risk profile. However, the networking variables in this study are insignificant and it contradicts (Ruslan, 2018) where borrowers need to be proactive in seeking opportunities to build networking ties with the microcredit providers.

The explanatory variable "accounting books" demonstrates statistical significance at the 1% level for both models as hypothesized. In comparison to SMEs without accounting books, those with accounting books encounter lower interest rates. The estimated coefficient for "accounting books" is -0.782, hence, the interest

rate charged decreases by 0.78% if SMEs possess accounting books that display business transactions to the lender. As financial transactions offer evidence of financial transparency in practice (Lee & Sohn, 2017) and portray the enterprises' money management behavior, the presence of financial statements enables the lender to evaluate the borrower's risk level.

Table 2: Estimated Results of the Determinants of the Interest Rate Charged on Microcredit

Independent Variables	Coefficient	Robust HC3 Standard Error
Constant	5.358	0.705
Borrower/Manager Characteristics		
Gender	0.143	0.154
Age (2)	0.006	0.194
Age (3)	0.119	0.223
Married	0.030	0.208
Education	-0.090	0.118
SMEs' Characteristics		
Age of Enterprise	-0.024	0.013*
Manufacturing Sector	0.031	0.244
Service Sector	0.108	0.237
Size of Enterprise	-0.008	0.017
Loan Characteristics		
Short Term	-0.417	0.240*
Long Term	0.171	0.142
Loan Amount	0.364	0.211*
Monthly Paid	0.631	0.439
Microcredit Provider		
Commercial Bank	-0.157	0.165
MFI	-0.107	0.134
Networking		
Commercial Bank	-0.038	0.047
MFIs	0.060	0.045
Creditworthiness		
Accounting Book	-0.782	0.115***
No. of Observations	386	
R-squared	0.204	

*, ** and***, represent the 10%, 5% and 1% significance levels, respectively.
Robust standard error applied HC3 options by STATA to correct the heteroscedasticity problem.

5. Managerial Implications and Recommendations

Understanding the determinants of microcredit interest rates can have significant managerial implications for microfinance institutions and policymakers. By unraveling these factors, MFIs can make informed decisions to optimize their operations, improve financial sustainability, and better serve their target clients. Additionally, understanding the determinants of interest rates helps in segmenting clients based on their risk profiles. Policymakers and regulators can use the insights from the study to develop appropriate regulations that balance the need for financial inclusion with consumer protection. If certain factors are found to

contribute significantly to higher interest rates, regulations can be put in place to address these issues and foster a more competitive microfinance market. Additionally, MFIs can provide financial education and literacy programs to their clients. Educating borrowers about the determinants of interest rates, how they are calculated, and ways to improve their creditworthiness can empower them to make informed financial decisions and negotiate better terms with the MFI. The utilization of research findings on the determinants of microcredit interest rates can inform policymakers and regulators in the development of suitable regulatory frameworks. Regulatory frameworks can be developed to effectively reconcile the goals of promoting financial inclusion and safeguarding consumer interests. In the event that particular determinants are discerned as influential in the escalation of interest rates, regulatory bodies possess the ability to intervene to mitigate these determinants and cultivate a microfinance market that is characterized by enhanced competitiveness and equitable practices.

Conclusion: In summary, long-established enterprises possessing proper accounting books and borrowing short-term small loan amounts may lead lenders to charge a lower interest rate. The price of microcredit is associated with the risk. Addressing the factors determining microcredit loan rates is crucial for policymakers, as it can help foster a conducive environment for economic growth and poverty alleviation. By understanding the dynamics behind interest rate settings in the microfinance sector, policymakers can devise strategies to make microcredit more affordable and accessible to those in need, ultimately promoting financial inclusion and socio-economic development. This study endeavors to shed light on the crucial question regarding factors influencing microcredit loan rates. This study aims to provide valuable insights into the field of microfinance, enabling policymakers and stakeholders to make informed decisions that positively impact borrowers with limited financial resources. By addressing this knowledge gap, a fair and sustainable microcredit framework that serves the best interests of all stakeholders involved can be developed.

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